

WHAT WE CLAIM IS:

1. Microparticles of a water-soluble material, which are smooth and spherical, and at least 90% of which have a mass median particle size of 1 to 10  $\mu\text{m}$ .
- 5 2. Microparticles according to claim 1, wherein said particle size is 1 to 5  $\mu\text{m}$ .
3. Microparticles according to claim 1, which have a maximum interquartile range of 3  $\mu\text{m}$ .
4. Microparticles according to claim 3, which have a  
10 maximum interquartile range of 2  $\mu\text{m}$ .
5. Microparticles according to claim 1, which are sterile.
6. Microparticles according to claim 1, which are at least partly coated with a water-insoluble material.
- 15 7. Microparticles according to claim 1, which additionally carry a receptor-binding component.
8. Microparticles according to claim 1, wherein said water-soluble material is a carbohydrate.
9. Microparticles according to claim 1, wherein said  
20 water-soluble material is an amino- or polyamino-acid.
10. Microparticles according to claim 1, wherein said water-soluble material is a fatty acid or ester thereof.
11. Microparticles according to claim 1, wherein said water-soluble material is a protein, peptide or enzyme.
- 25 12. Microparticles according to claim 1, wherein said water-soluble material is a human protein or fragment or recombinant thereof.
13. Microparticles according to claim 12, wherein said protein is human serum albumin.
- 30 14. Microparticles according to claim 1, wherein said water-soluble material is chemically or enzymatically modified, prior to formation of the microparticles.
15. Microparticles according to claim 1, which carry a diagnostic agent.
- 35 16. Microparticles according to claim 1, which carry a therapeutic agent.

17. Microparticles according to claim 15 or claim 16, obtainable by spray-drying an aqueous solution of said water-soluble material and said therapeutic or said diagnostic agent.

5 18. An inhaler device adapted to deliver a therapeutic agent via the pulmonary airways, which comprises said therapeutic agent in the form of microparticles according to claim 16 or claim 17.

10 19. In a method of treating a complaint by administration to the patient of an effective amount of a therapeutic agent that acts via pulmonary airways to treat the complaint, the improvement comprising administration of said therapeutic agent in the form of microparticles according to claim 16 or claim 17.